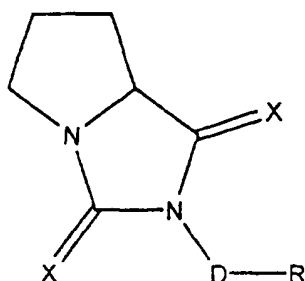


c 2

1. (Twice Amended) A compound of the formula:



or a pharmaceutically acceptable salt, ester or solvate wherein:

each X independently is O, S, or NR₂;

R₂ is selected from the group consisting of cyano, nitro, hydrogen, C₁-C₄ alkyl, hydroxy, and C₁-C₄ alkoxy;

D is a direct bond or C₁-C₈ alkyl or alkenyl;

R is selected from the group consisting of hydrogen, phenyl, biphenyl, cyclopropyl, cyclobutyl, cyclopentyl, cycloheptyl, cyclooctyl, naphthyl, 1,2,3,4-tetrahydronaphthyl, indenyl, azulenyl, fluorenyl, anthracenyl, isoindolyl, indolyl, benzofuranyl, benzothiophenyl, indazolyl, benzimidazolyl, tetrahydrofuranyl, tetrahydropyranyl, pyridyl, pyrrolyl, pyrrolidinyl, pyridinyl, pyrimidinyl, purinyl, quinolinyl, isoquinolinyl, tetrahydroquinolinyl, quinoliziny, furyl, benzofuranyl, thiophenyl, imidazolyl, oxazolyl, benzoxazolyl, benzoxazinyl, thiazolyl, isoxazolyl, isotriazolyl, oxadiazolyl, triazolyl, thiadiazolyl, pyridazinyl, pyrimidinyl, pyrazinyl, triazinyl, trithianyl, indoliziny, pyrazolyl, pyrazolinyl, pyrazolidinyl, benzopyranyl, thienyl, tetrahydroisoquinolinyl, cinnolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, naphthyridinyl, pteridinyl, carbazolyl, phenazinyl, phenothiazinyl, phenoxazinyl, and adamantyl;

wherein R may be optionally substituted with one substituent which is selected from the group consisting of halo, hydroxyl, nitro, trifluoromethyl, C₁-C₆ straight or branched chain alkyl, C₂-C₆ straight or branched chain alkenyl, C₁-C₄ alkoxy, C₂-C₄ alkenyloxy, phenyl, phenoxy, benzyloxy, and amino;

wherein when R is hydrogen, then D is C₅-C₇ alkyl or C₅-C₈ alkenyl;

wherein when R is phenyl and D is a bond, then R is substituted with phenyl, hydroxyl, trifluoromethyl, C₂-C₆ straight or branched chain alkyl or alkenyl, C₃-C₄ alkoxy, C₂-C₄ alkenyloxy, phenoxy, or benzyloxy;

C 2
cont

wherein when R is 4-trifluoromethylphenyl, then both X substituents are O;

wherein when both X substituents are O and D is C₂ alkyl, then R is not phenyl substituted with 4-nitro or 4-amino;

wherein when both X substituents are O and R is H, D is not C₁-C₈ alkyl;

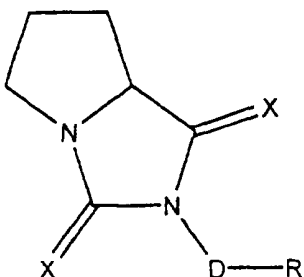
wherein when both X substituents are O and D is C₁ alkyl, R is not phenyl;

wherein when both X substituents are O and D is a direct bond, then R is not phenyl substituted with 3-trifluoromethyl;

wherein when one X is O, the other X is S, and D is a direct bond, then R is not phenyl substituted with 3-trifluoromethyl; and

wherein when both X substituents are O and D is C₃ straight chain alkyl, then R is not phenyl substituted with 3-methoxy.

2 3. (Amended) A pharmaceutical composition comprising an effective amount of a compound and a pharmaceutically acceptable carrier, wherein the compound is of the formula:



where

each X independently is O, S, or NR₂;

R₂ is selected from the group consisting of cyano, nitro, hydrogen, C₁-C₄ alkyl, hydroxy, and C₁-C₄ alkoxy;

D is a direct bond or C₁-C₈ alkyl or alkenyl;

R is an alicyclic or aromatic, mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein when R is an alicyclic monocyclic heterocyclic ring containing a nitrogen heteroatom, the alicyclic monocyclic heterocyclic ring contains only one nitrogen heteroatom;

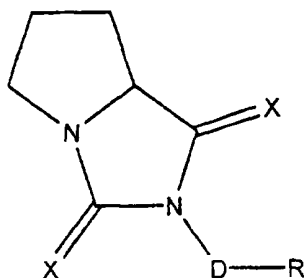
wherein R is optionally substituted with one substituent selected from the group consisting of hydrogen, halo, hydroxyl, nitro, trifluoromethyl, C₁-C₆ straight or branched chain alkyl, C₂-C₆ straight or branched chain alkenyl, C₁-C₄ alkoxy, C₂-C₄ alkenyloxy, phenyl, phenoxy, benzyloxy, and amino;

or a pharmaceutically acceptable salt, ester, or solvate thereof.

Please add the following new claims 63-68:

C 3

63. (New) The pharmaceutical composition according to claim 3, wherein the compound is selected from compounds of the formula:



or a pharmaceutically acceptable salt, ester or solvate wherein:

each X independently is O, S, or NR₂;

R₂ is selected from the group consisting of cyano, nitro, hydrogen, C₁-C₄ alkyl, hydroxy, and C₁-C₄ alkoxy;

D is a direct bond or C₁-C₈ alkyl or alkenyl;

R is selected from the group consisting of hydrogen, phenyl, biphenyl, cyclopropyl, cyclobutyl, cyclopentyl, cycloheptyl, cyclooctyl, naphthyl, 1,2,3,4-tetrahydronaphthyl, indenyl, azulenyl, fluorenyl, anthracenyl, isoindolyl, indolyl, benzofuranyl, benzothiophenyl, indazolyl, benzimidazolyl, tetrahydrofuranyl, tetrahydropyranyl, pyridyl, pyrrolyl, pyrrolidinyl, pyridinyl, pyrimidinyl, purinyl, quinolinyl, isoquinolinyl, tetrahydroquinolinyl, quinoliziny, furyl, benzofuranyl, thiophenyl, imidazolyl, oxazolyl, benzoxazolyl, benzoxazinyl, thiazolyl, isoxazolyl, isotriazolyl, oxadiazolyl, triazolyl, thiadiazolyl, pyridazinyl, pyrimidinyl, pyrazinyl, triazinyl,

trithianyl, indolizinyl, pyrazolyl, pyrazolinyl, pyrazolidinyl, benzopyranyl, thienyl, tetrahydroisoquinolinyl, cinnolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, naphthyridinyl, pteridinyl, carbazolyl, phenazinyl, phenothiazinyl, phenoxazinyl, and adamantyl;

wherein R may be optionally substituted with one substituent which is selected from the group consisting of halo, hydroxyl, nitro, trifluoromethyl, C₁-C₆ straight or branched chain alkyl, C₂-C₆ straight or branched chain alkenyl, C₁-C₄ alkoxy, C₂-C₄ alkenyloxy, phenyl, phenoxy, benzyloxy, and amino;

wherein when R is hydrogen, then D is C₅-C₇ alkyl or C₅-C₈ alkenyl;

wherein when R is phenyl and D is a bond, then R is substituted with phenyl, hydroxyl, trifluoromethyl, C₂-C₆ straight or branched chain alkyl or alkenyl, C₃-C₄ alkoxy, C₂-C₄ alkenyloxy, phenoxy, or benzyloxy;

wherein when R is 4-trifluoromethylphenyl, then both X substituents are O;

wherein when both X substituents are O and D is C₂ alkyl, then R is not phenyl substituted with 4-nitro or 4-amino;

wherein when both X substituents are O and R is H, D is not C₁-C₈ alkyl;

wherein when both X substituents are O and D is C₁ alkyl, R is not phenyl;

wherein when both X substituents are O and D is a direct bond, then R is not phenyl substituted with 3-trifluoromethyl;

wherein when one X is O, the other X is S, and D is a direct bond, then R is not phenyl substituted with 3-trifluoromethyl; and

wherein when both X substituents are O and D is C₃ straight chain alkyl, then R is not phenyl substituted with 3-methoxy.

64. (New) The pharmaceutical composition according to claim 3, wherein the compound is selected from the group consisting of:

(7aS) -2-(1-Naphthyl) perhydropyrrolo [1, 2-c] imidazole-1, 3-dione,

(7aS) -2-(2'-Phenyl) phenylperhydropyrrolo [1, 2-c] imidazole-1, 3-dione,

(7aS) -2- (4- (Trifluoromethyl) phenyl) perhydropyrrolo [1, 2-c] imidazole-1, 2-dione,

2-benzyl-3-thioxo-2, 5, 6, 7, 7a-pentahydro-2-azapyrrolizin-1-one,

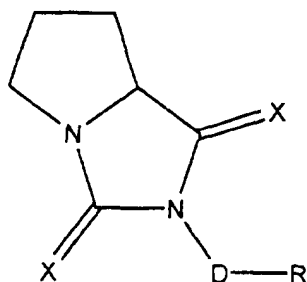
2-hexyl-2, 5, 6, 7, 7a-pentahydro-2-azapyrrolizine-1, 3-dione,

2-(2-ethyl) phenyl-2, 5, 6, 7, 7a-pentahydro-2-azapyrrolizin-1, 3-dione,

2-(3-phenylpropyl) -3-thioxo-2, 5, 6, 7, 7a-pentahydro-2-azapyrrolizin-1-one, and

2- (2-phenylethyl) -3-thioxo-2, 5, 6, 7, 7a-pentahydro-2-azapyrrolizin-1-one.

65. (New) A pharmaceutical composition comprising an effective amount of a compound and a pharmaceutically acceptable carrier, wherein the compound is of the formula:



where

each X independently is O, S, or NR₂;

R₂ is selected from the group consisting of cyano, nitro, hydrogen, C₁-C₄ alkyl, hydroxy, and C₁-C₄ alkoxy;

D is a direct bond or C₁-C₈ alkyl or alkenyl;

R is hydrogen, or an alicyclic or aromatic, mono-, bi- or tricyclic, carbo- or heterocyclic ring;

wherein R is optionally substituted with one substituent selected from the group consisting of hydrogen, halo, hydroxyl, nitro, trifluoromethyl, C₁-C₆ straight or branched chain alkyl, C₂-C₆ straight or branched chain alkenyl, C₁-C₄ alkoxy, C₂-C₄ alkenyloxy, phenyl, phenoxy, benzyloxy, and amino;

wherein when both X substituents are O and D is a bond, R is not phenyl;

wherein when one X is O and the other is S and D is a bond, then R is not phenyl;

wherein when both X substituents are O and R is H, D is not C₁-C₈ alkyl;

or a pharmaceutically acceptable salt, ester, or solvate thereof.

66. (New) The pharmaceutical composition of claim 65, further comprising an additional neurotrophic factor other than said compound.

67. (New) A method of treating a neurological disorder in an animal, comprising:
administering to the animal an effective amount of a compound to stimulate growth of damaged peripheral nerves or to promote neuronal regeneration, wherein the compound is one of claim 1.

68. (New) A method of stimulating growth of damaged peripheral nerves, comprising:



administering to damaged peripheral nerves an effective amount of a compound to stimulate or to promote growth of the damaged peripheral nerves, wherein the compound is one of claim 1.
